

Abstract Submitted  
for the DPP05 Meeting of  
The American Physical Society

**Particle dynamics in relativistic sheared layers and acceleration of Ultra High Energy Cosmic Rays** MAXIM LYUTIKOV, UBC — Relativistic outflows carrying large scale magnetic fields have large inductive potential and may accelerate protons to ultra high energies. We discuss a novel scheme of Ultra-High Energy Cosmic Ray acceleration due to drifts in magnetized, cylindrically collimated, sheared jets of powerful active galaxies. A proton carried by such a plasma is in an unstable equilibrium if  $\mathbf{B} \cdot \nabla \times \mathbf{v} < 0$ , so that kinetic drift along the velocity shear would lead to fast, *regular* energy gain. Acceleration rate *increases* with energy reaching at highest energies the absolute theoretical maximum of inverse relativistic gyro-frequency.

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Date submitted: 05 Jul 2005

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